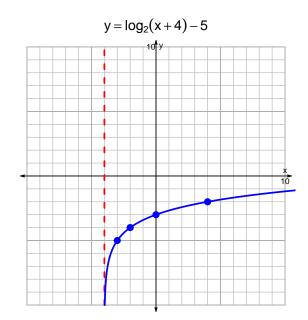
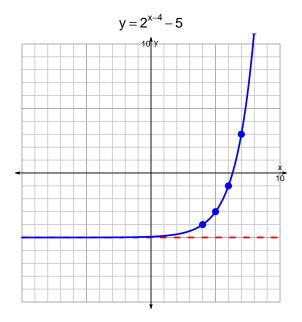
s18quiz: EXP LOG (SLTN v212)

1. Graph $y = \log_2(x+4) - 5$ and $y = 2^{x-4} - 5$ on the grids below. Also, draw any asymptotes with dotted lines.





2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$17 = \left(\frac{3}{5}\right) \cdot 10^{-7t/4}$$

Divide both sides by $\frac{3}{5}$.

$$\frac{17 \cdot 5}{3} = 10^{-7t/4}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{17\cdot 5}{3}\right) = \frac{-7t}{4}$$

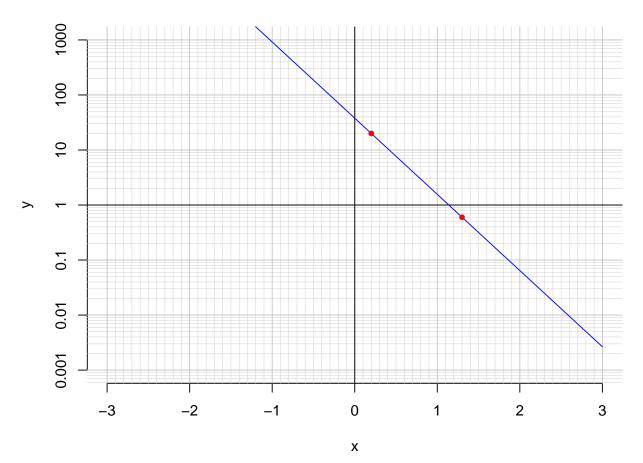
Divide both sides by $\frac{-7}{4}$.

$$\frac{-4}{7} \cdot \log_{10} \left(\frac{17 \cdot 5}{3} \right) = t$$

Switch sides.

$$t = \frac{-4}{7} \cdot \log_{10} \left(\frac{17 \cdot 5}{3} \right)$$

3. An exponential function $f(x) = 37.8 \cdot e^{-3.19x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate f(1.3).

$$f(1.3) = 0.6$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{3.19} \cdot \ln\left(\frac{x}{37.8}\right)$$

c. Using the plot above, evaluate $f^{-1}(20)$.

$$f^{-1}(20) = 0.2$$